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ABSTRACT

The Research and Development Center for Teacher Education, Texas, and the Jefferson County Public Schools, Colorado, worked in mutally supportive ways between 1976 and 1982. The R&D center needed a site where they could collect longitudinal data about the implementation of an innovation using the concepts Stages of Concern (SoC) and Levels of Use (LoU) that were part of the Concerns-Based Adoption Model (CBAM). In the school district, a revision of the elemenatary science program in grades 3-6 was to be adopted by all schools in the district. The district worked to implement the program in 76 elementary schools and a subset of 21 schools in which the researchers systematically studied the process. During the first 3 years the study focused on teachers as beginning innovation users, and during the next 2 years it focused on the role of principals as change facilitators. The findings indicate staff development and implementation support should begin with more emphasis on the "how to do its" and delay concentrated presentations of theory for more experienced users. In addition, the utility of the two concepts for planning and facilitating implementation were demonstrated. (MLF)

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There Really Can Be A Symbiotic Relationship Between Researchers and Practitioners: The Marriage of a National R&D Center and a Large School District

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With the assistance of our many colleagues.

> It can't be so long! It seems as if it was only two or three years ago that we developed the "Reuben Loft Agreement." Things really moved fast during the seven years that we have worked together. Just look at how some of the key staff members have moved up, how the district has changed and how widespread the study findings have become. The fact that we are all still friends as well as professional colleagues is significant in itself.

Our first thoughts as we began collaborating on this document included the reflections above and many more images of the very intense multi-year collaboration that existed between our two organizations. That a national university-based R&D Center and a large school district located 1000 miles away could work in mutually supportive ways over several years was unheard of in 1976. Between 1976 and 1982 the school district and the R&D Center invested in and gained from the collaborative effort. No special funds were set aside by either organization and no consultant fees were paid. Both parties saw the other as a resource and the collaborative effort as an opportunity.

The authors of this paper wish to acknowledge the important work of their colleagues. Without their continued involvement and dedication there would have been nothing of note to write about. In addition to the many teachers, administrators and research support staff the continued involvement of the following key change facilitators and researchers is acknowledged: Sue Brandon, Archie George, Marcia Goldstein, Teresa Griffin, Shirley Hord, Rolce Horning, Cindy Hrebar, Susan Loucks, Marge Melle, Jim Metzdorf, Beulah Newlove, William Rutherford, Linda Simons, Suzie Winters and Mary Jane Loveland.

In this report we briefly describe the basic objectives, some of the activities and a sample of the outcomes of the six year effort. They were intense, exciting and productive years. The outcomes include new district policies and procedures, new skills developed in school and research personnel, increased student achievement and research findings and concepts that now are being disseminated around the world.

The School District

Jefferson County Public Schools (Jeffco) is a large suburban district on the west side of Denver with a student population of approximately 75,000. The district which contains 76 elementary schools, 23 junior high schools and 13 high schools has the reputation of being progressive with a strong, innovative curriculum development staff. In 1976 the district had just recently made a policy level commitment to a well-defined curriculum process which the curriculum development staff was to follow in developing district-wide curriculum. This systematic process was designed to ensure quality curriculum for all schools in the district. In the years previous to 1976 there had been very extensive curriculum development or adoption of national curriculum projects often without serious commitment to ensuring that the curricula were used district-wide. A revision of the elementary science program in grades 3-6 was the first program in which the district followed the new development process and produced a series of guides that were to be used by all schools.

The Science Department staff consisting of a program coordinator and a resource specialist had had extensive experience with voluntary inservice at all levels but had not approached the problem of implementing a new program with all teachers. Like many school districts in the country, the Science Department previously had invested heavily in National Science Foundation

developed curriculum. These curriculum packages usually had the reputation of being considered high quality products but with only limited implementation in most schools. The Jeffco Science Department was well aware of this phenomena and was determined to use the revision of their program to ensure a more complete use of the materials on the part of the elementary classroom teachers.

The R&D Center

The Research and Development Center for Teacher Education (R&DCTE) is located at The University of Texas at Austin and is funded by the National Institute of Education. One of the research programs at R&DCTE has been conducting a series of studies of change and implementation in schools and colleges. The emphasis in this research has been on understanding change as it is experienced by the front line participants--teachers and administrators. A key assertion in this research has been that for the participants change is a process, not an event. Change is not accomplished at the classroom level simply by having a policy announced or conducting a two-day workshop. There is a time dimension to change and for the participants there are different stages and levels that they move through as they gradually become aware of a new program and move to being highly sophisticated users.

The basic assumptions and initial hypotheses were published at R&DCTE in 1973 (Hall, Wallace & Dossett) and the conceptual framework was given the name, Concerns-Based Adoption Model (CBAM). During the next several years a set of intensive activities were conducted that included the development of psychometrically sound measures and the collection of data from two major cross- sectional/semi-longitudinal studies to verify that indeed teachers and professors did exhibit a set of identifiable Stages of Concern about the innovation (Hall, George & Rutherford, 1977; Hall & Rutherford, 1976) and

Levels of Use of the Innovation (Hall, Loucks, Rutherford & Newlove, 1975; Hall & Loucks, 1977; Loucks, Newlove & Hall, 1976) as they were involved in implementation. Definitions of each of these dimensions are presented in Figures 1 and 2 respectively.

In 1976 the researchers had initially verified concepts and measures that were generic in definition and measurement so that they could readily be applied to any educational innovation. The researchers' need was for a site where they could collect longitudinal data about the implementation (an emerging concept in 1976) of an innovation. The study questions would focus on (1) the developmental tendencies of Stages of Concern (SoC) and Levels of Use (LoU), (2) the practicality of the concepts for planning and facilitating change and (3) the relationship of staff development interventions to movement and non-movement in SoC and LoU.

Researchers and Practitioners Meet

In early 1976 the Jeffco Science Coordinator (Harold Pratt) and the R&D Center's CBAM Project Director (Gene Hall) were brought together by their mutual contact, the Director of Staff Development in Jeffco (Jim Metzdorf). After an introduction to the CBAM model and research results, Pratt and Metzdorf saw the potential application of these concepts for the implementation of the Revised Elementary Science Program. The Jeffco staff saw the connections between the Stages of Concern and other elements in the model to the resistance (concerns) expressed by a number of teachers who had participated in the inservices and other activities related to the pilot and field test activities during the earlier development of the revised program. An extensive inservice program had been planned and approved at the time the

Figure 1

STAGES OF CONCERN ABOUT THE INNOVATION*

	STAGES OF CONCERN	DEFINITIONS
IMPACT	6 REFOCUSING	The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation.
	5 COLLABORATION	The focus is on coordination and cooperation with others regarding use of the innovation.
	4 CONSEQUENCE	Attention focuses on impact of the innovation on student in his/her immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.
TASK	3 MANAGEMENT	Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.
SELF	2 PERSONAL	Individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and his/her role with the innovation. This includes analysis of his/her role in relation to the reward structure of the organization, decision making, and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.
	1 INFORMATIONAL	A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about himself/herself in relation to the innovation. She/he is interested in substantive aspects of the innovation in a selfless manner such as general characteristics, effects, and requirements for use.
	0 AWARENESS	Little concern about or involvement with the innovation is indicated.

Hall, G. E., George, A. A. & Rutherford, W. L. Measuring stages of concern about the innovation: A manual for use of the SoC questionnaire. Austin: Research and Development Center for Teacher Education, The University of Texas, 1977.

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Figure 2

LEVELS OF USE OF THE INNOVATION

LEVELS OF USE	DEFINITION OF USE
0 NONUSE	STATE IN WHICH THE USER HAS LITTLE OR NO KNOWLEDGE OF THE INNOVATION, NO INVOLVEMENT WITH THE INNOVATION, AND IS DOING NOTHING TOWARD BECOMING INVOLVED.
Decision Point A	Takes action to learn more detailed information about the innovation.
I ORIENTATION	STATE IN WHICH THE USER HAS RECENTLY ACQUIRED OR IS ACQUIRING INFORMATION ABOUT THE INNOVATION AND/OR HAS RECENTLY EXPLORED OR IS EXPLORING ITS VALUE ORIENTATION AND ITS DEMANDS UPON USER AND USER SYSTEM.
Decision Point B	Makes a decision to use the innovation by establishing a time to begin.
II PREPARATION	STATE IN WHICH THE USER IS PREPARING FOR FIRST USE OF THE INNOVATION.
Decision Point C	Changes, if any, and use are dominated by user needs.
III MECHANICAL USE	STATE IN WHICH THE USER FOCUSES MOST EFFORT ON THE SHORT-TERM, DAY-TO-DAY USE OF THE INNOVATION WITH LITTLE TIME FOR REFLECTION. CHANGES IN USE ARE MADE MORE TO MEET USER NEEDS THAN CLIENT NEEDS. THE USER IS PRIMARILY ENGAGED IN A STEPWISE ATTEMPT TO MASTER THE TASKS REQUIRED TO USE THE INNOVATION, OFTEN RESULTING IN DISJOINTED AND SUPERFICIAL USE.
Decision Point D-1	A routine pattern of use is established.
IVA ROUTINE	USE OF THE INNOVATION IS STABILIZED. FEW, IF ANY, CHANGES ARE BEING MADE IN ONGOING USE. LITTLE PREPARATION OR THOUGHT IS BEING GIVEN TO IMPROVING INNOVATION USE OR ITS CONSEQUENCES.
Decision Point D-2	Changes use of the innovation based on formal or informal evaluation in order to increase client outcomes.
IVB REFINEMENT	STATE IN WHICH THE USER VARIES THE USE OF THE INNOVATION TO INCREASE THE IMPACT ON CLIENTS WITHIN THE IMMEDIATE SPHERE OF INFLUENCE. VARIATIONS ARE BASED ON KNOWLEDGE OF BOTH SHORT- AND LONG-TERM CONSEQUENCES FOR CLIENTS.
Decision Point E	Initiates changes in use of innovation based on input of and in coordination with what colleagues are doing.
V INTEGRATION	STATE IN WHICH THE USER IS COMBINING OWN EFFORTS TO USE THE INNOVATION WITH RELATED ACTIVITIES OF COLLEAGUES TO ACHIEVE A COLLECTIVE IMPACT ON CLIENTS WITHIN THEIR COMMON SPHERE OF INFLUENCE.
Decision Point F	Begins exploring alternatives to or major modifications of the innovation presently in use.
VI RENEWAL	STATE IN WHICH THE USER REEVALUATES THE QUALITY OF USE OF THE INNOVATION, SEEKS MAJOR MODIFICATIONS OF OR ALTERNATIVES TO PRESENT INNOVATION TO ACHIEVE INCREASED IMPACT ON CLIENTS, EXAMINES NEW DEVELOPMENTS IN THE FIELD, AND EXPLORES NEW GOALS FOR SELF AND THE SYSTEM.

From: The LoU Chart. Austin: Research and Development Center for Teacher Education, The University of Texas, 1975.

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research staff and the district personnel met but many of the elements suggested in the Concerns-Based Adoption model were not in place.

At the initial meeting it became obvious to both parties that there could be gains for both sides through a collaborative effort. Subsequently the research staff and key district personnel met to explore the possibilities of establishing a mutually supportive effort. The researchers would help monitor implementation by regularly collecting SoC and LoU data and the district would use the concepts and data to facilitate implementation of the Revised Science Curriculum in ways that were consistent with the CBAM model.

Agreement was reached quickly as the district worked to implement the program in 76 elementary schools and a subset of 21 schools in which the researchers systematically studied the process. Throughout there was continual discussion and collaboration about the implementation effort and study findings. The first three-year study focused on teachers as beginning innovation users and the next two years the research focused on the role of principals as change facilitators. The entire collaborative effort was productive and surprisingly trouble free.

An Example of Mutual Respect and Problem Solving

There were some knotty issues at times of course. For example, the researchers were somewhat hesitant to share all of their data, since this was the first major application of the work, and there were the usual concerns about confidentiality. The district personnel however, realized the value of the data and found it so useful that they wanted access to everything "now." They acknowledged the potential of the research to become a treatment and that data analyses take time, but they were on the firing line.

To clarify expectations and to protect all parties a group of central office decision makers and R&DCTE managers met and developed a statement of

procedures and rules about who could see what data and when. Briefly, the agreement states that all parties are entitled to see their own data, and that the next level up in the hierarchy is provided with masked (no names on it) data. Since this meeting took place upstairs in a Reuben's restaurant it was always referred to as the Reuben Loft Agreement; over the life of the collaborative effort as questions emerged this policy agreement was referred to and served all parties well.

Another tension zone for the researchers was balancing their role of researcher and their role as technical advisers and training specialist. However, due to the high level of professionalism on both sides and the full understanding of each others needs there was plenty of opportunity to discuss potential problems. District personnel respected the legitimate concerns of the researchers and the basic requirements of research designs even though the design needs were not always convenient or easily accommodated.

The collaboration between researchers and practitioners highlighted some interesting similarities and contrasts between the two groups. On one hand the goals, objectives and outcomes of the researchers and the practitioners were very compatible. Both groups wanted to understand and improve upon the implementation process in order to facilitate change on the part of teachers and improve the instructional climate and outcome for students. The practitioners, on the other hand, in their quest for immediate and practical applications often expected quick and simplistic answers to complex questions based upon a single data collection. For example, when the first SoC data were returned, the school-based people naively assumed that a straight-forward intervention could then be prescribed to modify future inservice groups. Out of this naivete, questions and dialogue emerged that produced new understandings of the limitations and potential of research as well as the

clarification of the somewhat different applications of the data that both groups had in mind. As a consequence the practitioners began to develop new and more sensitive ways to design and deliver staff development interventions that responded to differences in concerns. The researchers developed new approaches to data analyses and presentations to make findings more useful.

Collaboration and Cooperation

Over the seven years of the effort a great many activities occurred. The school district had its most successful district-wide implementation of curriculum and the R&D Center was able to conduct longitudinal studies in which the change facilitators naturally did the kinds of things that CBAM theory posited to be important and appropriate. Rather than describing all of the detail and extent of the collaboration, we present the following as illustrations of the ways that research affected practice and the ways that practice affected the research.

Systematic Monitoring of Implementation

To monitor implementation (the districts view) and to study the developmental tendencies of SoC and LoU (the researcher view) Levels of Use and Stages of Concern data were collected twice a year from the teachers in 19 study schools. Since one third of the schools in the district were introduced to the innovation at six month intervals it was possible to watch the overall movement of teachers and also to attribute movement to key interventions such as workshops and policy decisions. Due to the phasing of implementation across three subgroups it was also possible to observe effects of variations in the implementation design. As one example a summary of the Levels of Use data from across the three years is presented in Figure 3. Some of our conclusions from these data were:

Figure 3

Distribution of Teachers' Levels of Use of the Revised Science Program in Percentages for the First Three Years of Implementation

	Nonuse	Orientation	Preparation	Mechanical Use	Routine	Refinement	Integration	Renewal	
	0	I	II	III	IVA	IVB	V	VI	SAMPLE*
FALL 76	45	9	36	3	5	1	0	0	N=204
SPRING 77	25	4	24	27	15	3	0	1	N=202
FALL 77	6	10	25	28	22	2	6	2	N=167
SPRING 78	6	6	3	43	27	11	2	2	N=157
SPRING 79	9	1	1	29	45	12	1	3	N=146

*Sample size decreased over time mainly due to shifts in teacher assignments.

Loucks, S. F. & Melle, M. Implementing a district-wide science curriculum: The effects of a three-year effort. Paper presented at the annual meeting of the American Educational Research Association, Boston, 1980.

a) The different Levels of Use existed and could be identified.

b) Teachers did not instantaneously move from LoU 0 Nonuse to LoU IVA Routine Use. In other words use is not a dichotomous variable.

c) Even when there is timely and high quality staff development and related support, movement to higher LoU's tends to take more than one school year.

d) Even after two years, many teachers were still at a Level III Mechanical Use, therefore staff development and related assistance should be provided for more than the first year.

e) Teachers do not automatically move to LoU IVB Refinement and above. Special facilitation and support is needed for teachers to move to higher LoU's and this can only happen after implementation has taken place.

A related point from the Stages of Concern data is that attempts to facilitate teachers' movement to Stage 3 Management concerns prior to their actually beginning use of the revised curriculum proved futile. The SoC profiles verified what the inservice instructors had observed. Prior to use of the materials in their classroom, teachers were not interested in and did not remember suggestions and assistance on the topic of classroom organization, materials management, student grouping, etc. The "how to do it" interventions became most relevant once use began, which suggests that many pre-school inservice workshops probably should occur 2-4 weeks into the school year.

Examination of Workshop Effects

Due to the large number of schools and teachers and the decision to implement the program in one third of the schools at a time it was possible to do short-term quasi-experimental studies and to have replications of some treatments. For example in one set of studies the day long inservice sessions for teachers were examined more closely. It was hypothesized that teachers would prefer different content and processes in an inservice session if their

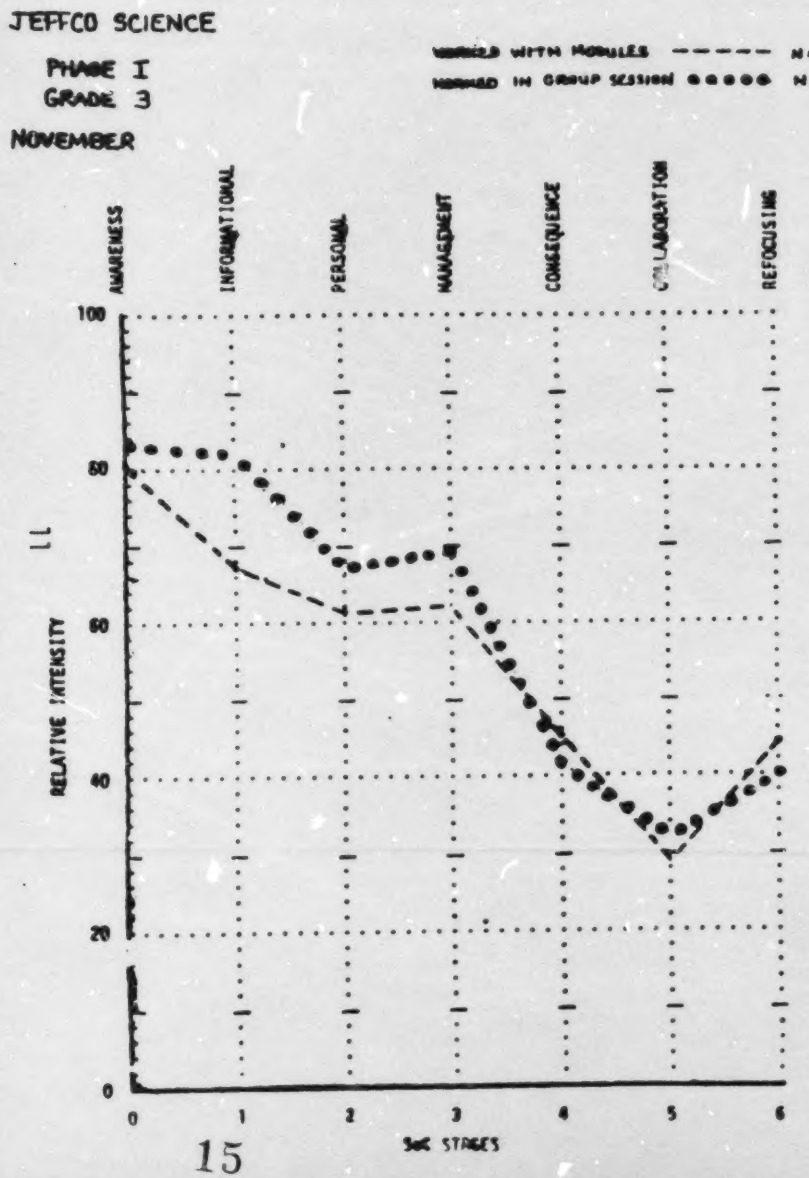
concerns were different. To test this, a set of inservice days were designed with alternative activities. At one point in the day teachers were asked to choose between staying in a group with several lead teachers who were experienced in using the materials to talk about mechanics or taking the option of several modules which were more self-paced and dealt with concepts such as Piaget, wait time and teaching outdoor activities. In terms of concerns theory, the first option was designed to appeal to teachers with higher Stage 2 Personal and Stage 3 Management Concerns. The second option was designed for persons who had less of these concerns and more impact concern (Stages 4, 5, and 6). Pre/post SoC profiles of teachers at Grade 3 are included as Figure 4 to illustrate the findings. Teachers did tend to self select in ways that were consistent with theory and in ways that seemed to be related to experience with and confidence in using the new materials. These findings suggest that staff development and implementation support should begin with more emphasis on the "how to do its" and delay concentrated presentations of theory for more experienced users.

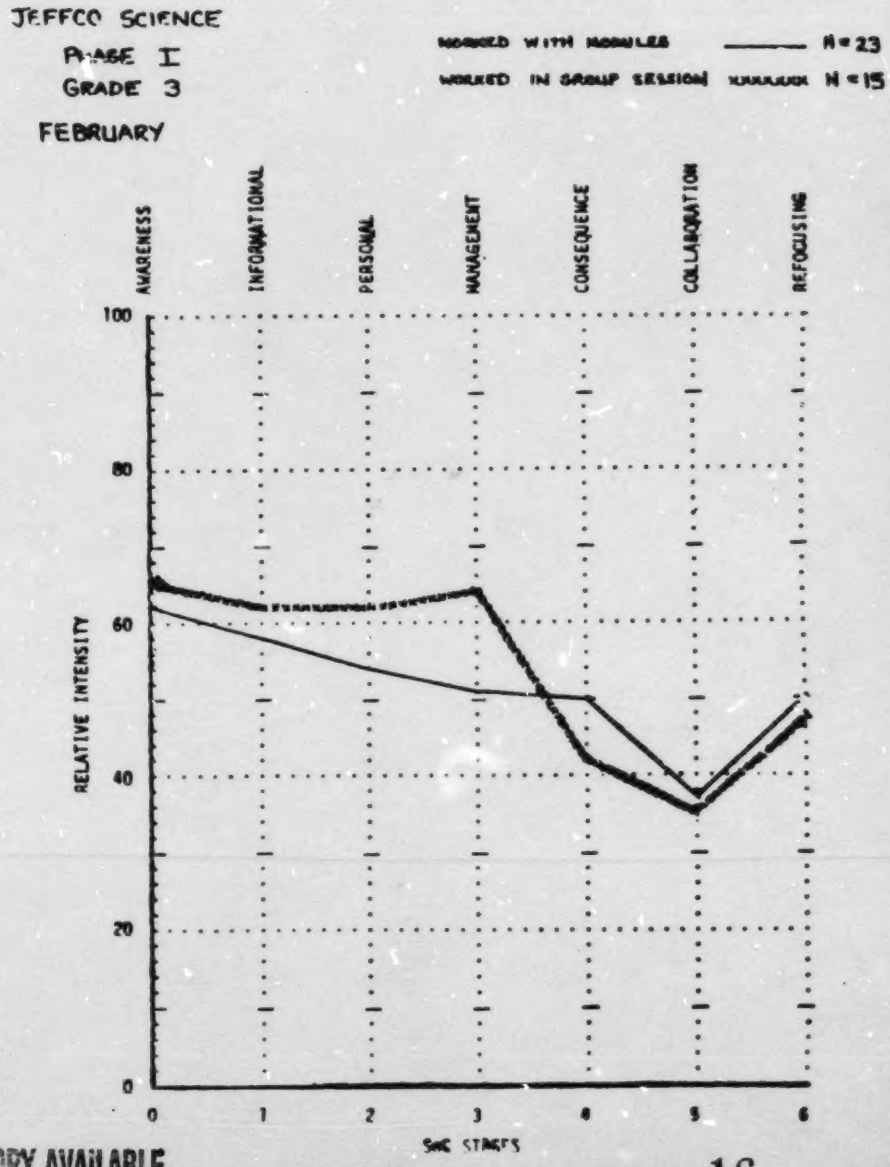
Long-Term Evaluation and Improvement of Implementation

One feature of the Concerns-Based Model that both groups began to work on as soon as the inservice sessions were being planned and initially being conducted was that of describing what a well implemented program should look like. The research staff had developed the concept of Innovation Configurations (Hall & Loucks, 1981) in which "use" would be described in an innovation specific way as compared to the generic pattern described by LoU. From an independent perspective which predated the meeting of the two groups, the Jeffco Science Department had developed a list of Characteristics of a Well Implemented Elementary Science Program and had decided to evaluate the extent and quality of the implementation in selected schools based upon these

Figure 4

Pre and Post SoC Profiles for Teachers Grouped by the Workshop Option They Selected





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characteristics. The Jeffco staff was convinced it was futile to measure student achievement outcomes until some measure of the degree or extent of implementation could be determined. Changes in student outcomes should not be attributed to the program unless some knowledge is available as to the degree it is in use with students (Pratt, Winters & George, 1980).

After several months of combined efforts to jointly develop an Innovation Configuration Component Checklist for the Revised Elementary Science program it became evident that the ultimate uses of the measure were perceived in such significantly different ways by each group that a common instrument could not be agreed upon. At this point in time, after having gained a great deal of understanding and appreciation of the problem itself and the needs of each group, the parties agreed to a friendly "divorce" with regard to this part of the collaborative effort. The school district personnel proceeded to develop their own "key features" as they came to be known in the school district and, subsequently, used them to evaluate the degree of implementation in randomly selected schools. More recently through a significantly modified procedure, they used the key features in a collaborative sense with the staff of individual schools to improve instruction with the elementary science program.

For their work the researchers used their version of an Innovation Configuration Component Checklist. One of the outcomes was the opportunity to contrast methodologies and clarification of some basic conceptual issues about implementation. This "tension" produced two slightly different products both of which had better quality as a result of the mutual attempt to produce a common product and the resulting agreement to disagree.

The Role of the Principal

The first three years of the collaborative effort focused primarily on teachers. All schools and teachers received the same levels of support and

training. All schools in the district were basically similar, but there were striking differences in the implementation data that were collected at the classroom level. Teachers varied in their Stages of Concern about the Innovation and their Levels of Use of the Innovation. Through a series of discussions between the district and the research staff and secondary analyses of the data that had been collected the hypothesis was put forward that implementation varied in the schools because of the actions and concerns of the principals. Further, it appeared that the schools could be sorted into three groups based on teacher Stages of Concern data and that the schools were clustered almost identically when the principal's "style" was used to make the groupings (Hall, Hord & Griffin, 1980).

This hypothesizing lead to the major study of principals as change facilitators (The Principal-Teacher Interaction Study) which was done in Jeffco and two other school districts during 1980-81. The outcomes of this study, which were reported through symposia and individual papers at the 1982 and 1983 annual meetings of the American Educational Research Association, include the identification and description of three change facilitator styles (Responder, Manager, Initiator) and the determination of a correlation of .74 between principal change facilitator style and implementation success at the classroom level as measured by the diagnostic dimensions of the Concerns-Based Adoption Model (Hall & Rutherford, 1983; Huling & Hall, Hord & Rutherford, 1983).

In Jeffco the hypotheses about the role of the principal led to a new round of implementation support. In the fourth and fifth years of implementation principals as monitors and facilitators of implementation became the target. Using the key features of the program, principals received special training and coaching in order for them to more effectively affect

implementation by their teachers. CBAM concepts were a part of this training and three of the principals participated in the R&DCTE principal study.

Important Outcomes for All Parties

The description above is a brief highlighting of some of the activities, events, aha's and insights that developed out of the collaborative relationship between the R&DCTE and Jeffco. Both groups saw it to be in their professional interest to work with the other. We know that each staff member gained individually and that the work of each organization was of higher quality and meaningfully different as a result of working together.

In this brief description it has not been possible to fully develop the picture of all that occurred during the seven-year effort. Reviewing the papers that have been developed out of this work would be one way to fill in the detail. Interviewing the key actors would be another. Much was done and many people were involved and there were clear and positive effects on research, practice and policy.

Effects of Research

The effects of the collaboration on the school district can be summarized by the following outcomes.

1. The elementary science program actually in place and available to students in Jeffco has been significantly improved. Not only has the program content been improved but it is actually available to students because of the high degree of implementation by all teachers in the district.

2. There is extensive understanding of the concept of change as a process/not an event on the part of virtually all the curriculum and staff development people within the District. In addition, the CBAM model and its

use have spread to most of the principals through informal professional and working contacts and more formally through inservices offered by the personnel from the R&D Center and from the Jeffco Staff Development Academy and Science Department.

3. The CBAM model has been used in many implementation efforts both within the district and in neighboring school districts following the successful use by the Jeffco Science Department.

4. The Division of Instruction in Jeffco has taken on a significantly increased role in the implementation and long-range maintenance of programs in the school district. As another example, largely as a result of the success of the Science Department, the Board of Education adopted Policy IMB which called for the creation of Key Features (Innovation Configurations) in all subject matter areas and their use in the monitoring and improvement of instruction in individual schools.

Effects on The R&D Center and The Research

1. The utility of the concepts Stages of Concern and Levels of Use for planning and facilitating implementation were demonstrated.

2. The procedures for assessing teachers' SoC and LoU were shown to be applicable to monitoring implementation.

3. Movements in SoC and LoU were related to particular staff development and principal interventions.

4. The first three year effort led to the development of new hypotheses about the role of the principal and subsequently to a second major study.

5. The training experiences that were developed to introduce Jeffco inservice teacher leaders to SoC and LoU is now packaged as the Concerns-Based Consulting Skills Workshop, which is regularly offered across the United

States and in serveral other countries, including Australia, Belgium, Canada and The Netherlands.

In Summary

It is now seven years since the initial meeting and the subsequent "Reuben Loft Agreement." What started out to be a three-year project involving a university-based R&D Center and a science department of a large suburban school district grew into a longer term collaboration. The initial study of the implementation of a science curriculum expanded vertically to include a more complete description of use (i.e., key features or innovation configurations), the role of the principal in implementation and, finally, the identification and description of three change facilitator styles and the correlation of those styles with implementation success. The collaboration expanded horizontally by affecting virtually the entire school district through the activities of other program developers and principals through the knowledge of the model and the adoption of Policy IMB. The effect expanded even further horizontally into other school districts, universities, and the State Department of Education. What was to have been a three-year project expanded to a six-year cooperative endeavor. Although the formal activities and "Reuben Loft Agreement" are history, the relationship and impact continue. Consultation and communication are ongoing among all parties involved. The enthusiasm for collaboration in research and in its application continues to be high for both groups.

The attached list of reports and papers is an illustration of how productive the collaborative effort was and continues to be. The list includes articles and papers that were presented at annual meetings of the American Educational Research Association and other places. Notice the

multiple authorship of papers and that practitioners are not only co-authors but first authors.

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